

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

PATENT APPLICATION OF:

Torp et al.

SERIAL NO.: Unassigned

FILED: Herewith

FOR: METHOD AND APPARATUS FOR  
PROVIDING REAL-TIME  
CALCULATION AND DISPLAY OF  
TISSUE DEFORMATION IN  
ULTRASOUND IMAGING

**EXPRESS MAIL NO. EV 327683425 US**

**Date: November 10, 2003**

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Dear Sirs:

Pursuant to 37 C.F.R. § 1.56, it is respectfully requested that the following reference(s) be considered in the examination of the above-identified patent application:

|                  |                 |
|------------------|-----------------|
| US – 5,800,356-A | Criton et al.   |
| US – 5,474,070-A | Ophir et al.    |
| US- 5,840,028-A  | Chubachi et al. |
| US – 5,785,654-A | Linuma et al.   |
| US – 5,615,680-A | Sano            |
| US – 5,462,058-A | Yamada et al.   |
| US – 6,099,471-A | Torp et al.     |
| US – 6,352,507   | Torp et al.     |
| WO-94/236532     | PCT – 10/94     |

Heimdal et al.: "Real-time Strain Velocity Imaging (SVI)" 1997 IEEE Ultrasonics Symposium Proceedings, vol. 2, 1997, pages 1423-1426.

Jackson et al.: "3-D Ultrasonic Imaging of Structure and Elasticity of the Carotid Bifurcation" IEEE Ultrasonic Symposium Proceedings, vol. 2, 1995, pages 1419-1422.

Kanai et al.: "Noninvasive Evaluation of local Myocardial Thickening and its Color-Coded Imaging" IEEE Transactions and Ultrasonics, Ferroelectrics and Frequency Control, vol. 44, no. 4, July 1997, pages 752-768

Tsutsui et al.: "Comparative Usefulness of Myocardial Velocity Gradient in Detecting Ischemic Myocardium by a Dobutamine Challenge" J. Am. Coll. Cardiol., vol. 31, 1998, pages 89-93.

McDicken et al.: "Colour Doppler Velocity Imaging of the Myocardium" Ultrasound in Med. & Biol., vol. 18, 1992, pages 651-654.

Palka et al.: "Differences in Myocardial Velocity Gradient Measured Throughout the Cardiac Cycle in Patients With Hypertrophic Cardiomyopathy, Athletes and Patients With Left Ventricular Hypertrophy Due to Hypertension" J. Am. Coll. Cardiol., vol. 30, 1997, pages 760-768.

Nowicki, et al.: "Assessment of Wall Velocity Gradient Imaging Using a Test Phantom" Ultrasound in Medicine and Biology, vol. 22, 1996, pages 1255-1260.

Uematsu, et al.: "Myocardial Velocity Gradient as a New Indicator of Regional Left Ventricular Contraction: Detection by a Two-Dimensional Tissue Doppler Imaging Technique" J. Am. Coll. Cardiol., 40l. 26, 1995, pages 217-223.

Fleming et al.: "Myocardial velocity gradients detected by Doppler imaging" The British Journal of Radiology, vol. 67, 1994, pages 679-688.

Hartley et al.: "Doppler Measurement of Myocardial Thickening with a Single Epicardial Transducer" Am. J. Physiol., vol. 245, 1983, pages H1066-H1072.

O'Donnel et al.: "Internal Displacement and Strain Imaging Using Ultrasonic Speckle Tracking," IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, vol. 41, No. 3, May 1994.

The above-identified reference(s) are listed on the attached PTO Form 1449 and copies are also enclosed herewith.

This submission, is in no way intended as an admission that the above-cited references constitute prior art under any subsection of 35 U.S.C. § 102. Applicant expressly retains the right to take any actions necessary to remove the above-cited references from the available prior art.

Consideration of the above-identified references in the examination of the present patent application is respectfully requested.

No fee is believed to be due because it is believed that this statement and enclosures are being filed before the first Office Action on the merits has been mailed by the PTO. The basis of this belief is that no Office Action on the merits appears to have been received by the undersigned to date. Please charge any fees due in connection with this statement to the deposit account of GTC Account No. 070845.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'Peter J. McAndrews', written over a horizontal line.

Peter J. McAndrews

Reg. No. 38,547

Date: November 10, 2003

Form PTO-1449  
(Rev. 8-83)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

ATTORNEY DOCKET  
NO.

12483US05

SERIAL NO.

Unassigned

INFORMATION DISCLOSURE CITATION  
(Use several sheets if necessary)

APPLICANT:

Torp et al.

FILING DATE

Herewith

GROUP  
ART UNIT:

U.S. PATENT DOCUMENTS

| *EXAMINER<br>INITIAL |   | DOCUMENT<br>NUMBER | DATE    | NAME            | CLASS | SUBCLASS | FILING DATE<br>IF<br>APPROPRIATE |
|----------------------|---|--------------------|---------|-----------------|-------|----------|----------------------------------|
|                      | A | US-5800356-A       | 09-1998 | Criton et al.   |       |          |                                  |
|                      | B | US-5474070-A       | 12-1995 | Ophir et al.    |       |          |                                  |
|                      | C | US-5840028-A       | 11-1998 | Chubachi et al. |       |          |                                  |
|                      | D | US-5785654-A       | 07-1998 | Linuma et al.   |       |          |                                  |
|                      | E | US-5615680-A       | 04-1997 | Sano            |       |          |                                  |
|                      | F | US-5462058-A       | 10-1995 | Yamada et al.   |       |          |                                  |
|                      | G | US-6099471-A       | 08-2000 | Torp et al.     |       |          |                                  |
|                      | H | US 6352507B1       | 03-2002 | Torp et al.     |       |          |                                  |
|                      | I |                    |         |                 |       |          |                                  |

FOREIGN PATENT DOCUMENTS

|  |   | DOCUMENT<br>NUMBER | DATE     | COUNTRY | CLASS | SUBCLASS | TRANSLATION |    |
|--|---|--------------------|----------|---------|-------|----------|-------------|----|
|  |   |                    |          |         |       |          | YES         | NO |
|  | J | WO 94/23652        | 10/27/94 | PCT     | A61B  | 8/12     |             |    |
|  | K |                    |          |         |       |          |             |    |

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

|  |    |  |
|--|----|--|
|  | AA | Heimdal et al.: "Real-time Strain Velocity Imaging (SVI)" 1997 IEEE Ultrasonics Symposium Proceedings, vol. 2, 1997, pages 1423-1426.  |
|  | BB | Jackson et al.: "3-D Ultrasonic Imaging of Structure and Elasticity of the Carotid Bifurcation" IEEE Ultrasonic Symposium Proceedings, vol. 2, 1995, pages 1419-1422.  |
|  | CC | Kanai et al.: "Noninvasive Evaluation of local Myocardial Thickening and its Color-Coded Imaging" IEEE Transactions and Ultrasonics, Ferroelectrics and Frequency Control, vol. 44, no. 4, July 1997, pages 752-768  |
|  | DD | Tsutsui et al.: "Comparative Usefulness of Myocardial Velocity Gradient in Detecting Ischemic Myocardium by a Dobutamine Challenge" J. Am. Coll. Cardiol., vol. 31, 1998, pages 89-93.   |
|  | EE | McDicken et al.: "Colour Doppler Velocity Imaging of the Myocardium" Ultrasound in Med. & Biol., vol. 18, 1992, pages 651-654.   |
|  | FF | Palka et al.: "Differences in Myocardial Velocity Gradient Measured Throughout the Cardiac Cycle in Patients With Hypertrophic Cardiomyopathy, Athletes and Patients With Left Ventricular Hypertrophy Due to Hypertension" J. Am. Coll. Cardiol., vol. 30, 1997, pages 760-768. |
|  | GG | Nowicki, et al.: "Assessment of Wall Velocity Gradient Imaging Using a Test Phantom" Ultrasound in Medicine and Biology, vol. 22, 1996, pages 1255-1260.   |
|  | HH | Uematsu, et al.: "Myocardial Velocity Gradient as a New Indicator of Regional Left Ventricular Contraction: Detection by a Two-Dimensional Tissue Doppler Imaging Technique » J. Am. Coll. Cardiol., 40l. 26, 1995, pages 217-223.   |
|  | JJ | Fleming et al.: "Myocardial velocity gradients detected by Doppler imaging" The British Journal of Radiology, vol. 67, 1994, pages 679-688.  |
|  | KK | Hartley et al.: "Doppler Measurement of Myocardial Thickening with a Single Epicardial Transducer" Am. J. Physiol., vol. 245, 1983, pages H1066-H1072.   |
|  | LL | O'Donnel et al.: "Internal Displacement and Strain Imaging Using Ultrasonic SpeckleTracking," IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, vol. 41, No. 3, May 1994.   |
|  |    |  |
| EXAMINER   |    | DATE CONSIDERED  |
| <p>*EXAMINER: Initial citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</p> |    |  |